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Congenital Heart Disease

COMPLICATIONS FROM ULTRASOUND GUIDED FEMORAL ARTERIAL ACCESS IN PEDIATRIC CARDIAC CATHETERIZATION: A PROSPECTIVE SINGLE CENTER COHORT STUDY

Poster Contributions
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Authors: *John Alexander, Benjamin Waller, Thomas Yohannan, Agrawal Vijaykumar, Hannah Lloyd, Marsha Stewert-Sellers, Shyam Sathanandam, University of Tennessee, Memphis, TN, USA, Le Bonheur Children's Hospital, Memphis, TN, USA*

Background: Acute loss of arterial pulse (LOP) is a known complication in children following arterial access for cardiac catheterization. In the modern era of using ultrasound guided femoral arterial access (UGFAA),the incidence of LOP in children has not been described. The incidence of LOP requiring treatment when UGFAA is not employed in children ranges between 4% and 8%. The objectives of this study was to describe the incidence of and identify risk factors for LOP in children who had UGFAA during cardiac catheterization.

Methods: A prospective study was performed including all cardiac catheterizations using UGFAA in children (≤18 years) over a 20 months period. All patients underwent ultrasound and Doppler evaluation prior to and at the end of the procedure. Treatment for LOP was initiated if there was documented thrombus or if there was absence of Doppler pulsations an hour after the completion of the procedure. Multivariate analysis was performed to identify independent risk factors for LOP.

Results: UGFAA was obtained in 486 catheterization procedures on 427 children. LOP was identified in 33 cases (6.8%). However, an occlusive thrombus by ultrasound was diagnosed in only 9 patients (1.8% of all cases). The LOP reversed in 10 cases within an hour with a strong Doppler signal. The remaining 23 patients were treated for LOP (4.7%). Children ≤18 months were at higher risk for LOP (25/33; OR = 5.3, 95% CI: 2.3 - 12.3, $P < 0.001$). In children ≤18 months the incidence of LOP was 10.48% and for LOP requiring treatment was 7.5%. Younger age ($P < 0.001$) and less % change in distal Doppler velocity ($P < 0.001$) were the only significant independent predictors for LOP. Number of access attempts, time required to obtain access, operator experience, sheath size, sheath exchanges, activated clotting time, hemoglobin, cardiac output, contrast dose, procedure length, etc., were not found to be significant factors.

Conclusion: The overall incidence of LOP requiring treatment of 4.7% and 7.5% in Children ≤18 months is lower than reported when UGFAA is not used. Children ≤18 months were at higher risk. There were no other independent predictors and hence LOP after catheterization is likely multifactorial in etiology.